

CLAIMS

1. Transmission (1) for distributing a drive torque to at least two drive output shafts (7, 8) with at least two planetary gearsets (2, 3) having at least three shafts, such that one respective shaft (4 or 5) of one planetary gearset (2 or 3) is connected to a drive input shaft (6) and one respective shaft of each planetary gearset (2 or 3) constitutes one of the drive output shafts (7 or 8), in each case with at least one further shaft (9 or 10) of each planetary gearset (2 or 3) connected to a shaft (10 or 9) of the other planetary gearset (3 or 2) by means of a controllable and regulated active connection (11), and an operating-status-dependent torque of one shaft (9 or 10) can be supported as a function of an operating status of the respective other shaft (10 or 9) actively connected to it via the said active connection (11), in such manner that if a rotation speed difference occurs between the output shafts (7, 8) a speed-difference-changing torque is applied by the active connection (11) at least for a time to the planetary gearsets (2, 3), and such that the first shaft (5) of the second planetary gearset is connected directly to the drive shaft (6) and a gear wheel (13) mounted on the housing is provided between the first shaft (4) of the first planetary gearset and the drive shaft (6).

2. Transmission according to claim 1, characterized in that the active connection (11) between the third shaft (9) of the first planetary gearset (2) and the third shaft (10) of the second planetary gearset (3) is formed with at least one device (22) for applying a torque to at least one of the two third shafts (9, 10) of the first or second planetary gearsets (2, 3) in active connection with one another, so that in each case a torque can be applied to the actively connected shafts (9, 10).

3. Transmission according to claim 2, characterized in that the device (22) for applying a torque comprises at least one drive aggregate.

4. Transmission according to claim 3, characterized in that the drive aggregate is in the form of an electric motor or a hydraulic motor.

5. Transmission according to claim 2 to 4, characterized in that the device (22) for applying a torque comprises at least one brake (37; 40, 41).

6. Transmission according to any of claims 1 to 5, characterized in that the active connection (11) between the third shaft (9) of the first planetary gearset (2) and the third shaft (10) of the second planetary gearset (3) comprises two power paths parallel to one another, such that one power path is formed as a connection that can be made by frictional shift elements (40, 41) by means of which the said two third shafts (9 and 10) of the first and second planetary gearsets (2 and 3) can be connected together, and a second power path is formed by a third planetary gearset (24) that can be engaged.

7. Transmission (1) for distributing a drive torque to at least two drive output shafts (7, 8) with at least two planetary gearsets (2, 3) having at least three shafts, such that one respective shaft (4 or 5) of one planetary gearset (2 or 3) is connected to a drive input shaft (6) and one respective shaft of each planetary gearset (2 or 3) constitutes one of the drive output shafts (7 or 8), in each case with at least one further shaft (9 or 10) of each planetary gearset (2 or 3) connected to a shaft (10 or 9) of the other planetary gearset (3 or 2) by means of a controllable and regulated active connection (11), and an operating-status-dependent torque of one shaft (9 or 10) can be supported as a function of an operating status of the respective other shaft (10 or 9) actively connected to it via the said active connection (11), in such manner that if a rotation speed difference occurs between the output shafts (7, 8) a speed-difference-changing torque is applied by the active connection (11) at least for a time to the planetary gearsets (2, 3) and such that the active connection (11) between the two third shafts (9, 10) of the planetary gearsets (2, 3) is formed by a third planetary gearset (24), and one of the shafts (28) of the said third planetary gearset (24) is fixed on the housing.

8. Transmission according to claim 7, characterized in that the active connection (11) between the two third shafts (9, 10) of the first planetary gearset (2) and second planetary gearset (3) is formed by a continuously variable transmission ratio device (36).

9. Transmission according to claims 7 or 8, characterized in that the active connection (11) between the third shaft (9) of the first planetary gearset (2) and the

third shaft (10) of the second planetary gearset (3) is formed with at least one device (22) for applying a torque to at least one of the two actively connected shafts (9, 10) of the planetary gearsets (2, 3).

10. Transmission according to claim 9, characterized in that the device (22) for applying a torque can be brought into active connection with one of the shafts (25; 28) of the third planetary gearset (24).

11. Transmission according to claims 9 or 10, characterized in that the device (22) for applying a torque comprises at least one drive aggregate

12. Transmission according to claim 11, characterized in that the drive aggregate is in the form of an electric motor or a hydraulic motor.

13. Transmission according to any of claims 10 to 12, characterized in that the device (22) for applying a torque comprises at least one brake (37; 40, 41).

14. Transmission according to claim 13, characterized in that respective third shafts (9, 10) of the first and second planetary gearsets (2, 3) are in each case in active connection with a brake (40, 41) in such manner that a degree of distribution of the drive torque between the two output shafts (7, 8) varies as a function of the transfer capacities of the brakes (40, 41).

15. Transmission according to any of claims 7 to 14, characterized in that the third shaft (9) of the first planetary gearset (2) is connected to a first shaft (25) of the third planetary gearset (24).

16. Transmission according to any of claims 7 to 15, characterized in that the third shaft (10) of the second planetary gearset (3) is connected to a third shaft (26) of the third planetary gearset (24).

17. Transmission according to claim 16, characterized in that the active connection (11) can be engaged by means of a clutch (39) arranged between the third shaft (9) of the first planetary gearset (2) and the first shaft (25) of the third planetary gearset (24) and/or the third shaft (10) of the second planetary gearset (3) and the third shaft (26) of the third planetary gearset (24).

18. Transmission (1) for distributing a drive torque to at least two drive output shafts (7, 8) with at least two planetary gearsets (2, 3) having at least three shafts, such that one respective shaft (4 or 5) of one planetary gearset (2 or 3) is

connected to a drive input shaft (6) and one respective shaft of each planetary gearset (2 or 3) constitutes one of the drive output shafts (7 or 8), in each case with at least one further shaft (9 or 10) of each planetary gearset (2 or 3) connected to a shaft (10 or 9) of the other planetary gearset (3 or 2) by means of a controllable and regulated active connection (11), and an operating-status-dependent torque of one shaft (9 or 10) can be supported as a function of an operating status of the respective other shaft (10 or 9) actively connected to it via the said active connection (11), in such manner that if a rotation speed difference occurs between the output shafts (7, 8) a speed-difference-changing torque is applied by the active connection (11) at least for a time to the planetary gearsets (2, 3) and such that the active connection (11) between the two third shafts (9, 10) of the first planetary gearset (2) and the second planetary gearset (3) is formed with a continuously variable transmission ratio device (36).

19. Transmission according to claim 18, characterized in that the active connection (11) between the actively connected shafts (9, 10) of the first planetary gearset (2) and the second planetary gearset (3) is formed with a third planetary gearset (24).

20. Transmission according to claims 18 or 19, characterized in that the shafts (4, 5) of the first (2) and second (3) planetary gearsets connected to the drive shaft (6) are connected to one another by a gear wheel (13) mounted on the housing.

21. Drive train (42) of a vehicle with a drive-power source, with at least two driven vehicle axles (43, 44) and with at least one transmission (1) according to any of the preceding claims, characterized in that the transmission (1) is arranged in a power path between the drive-power source and the vehicle axles (43, 44) for the distribution of the drive torque from the drive engine between the vehicle's axles (43, 44) as necessary and in an operating-situation-dependent manner, and/or in a power path of a vehicle axle (43 or 44) for the distribution of the fraction of the drive torque delivered to the said vehicle axle (43 or 44) in the transverse direction of the vehicle between two drive wheels of the vehicle axle (43 or 44).

22. Drive train according to claim 21, characterized in that in the power path between the drive-power source and the vehicle axles (43, 44) a controllable clutch (45) is provided for the distribution of the drive torque from the power source between the axles (43, 44) as necessary and in an operating-status-dependent manner.

23. Drive train according to claim 21, characterized in that in the power path between the power source and the vehicle's axles (43, 44), for distributing the drive torque from the drive engine between the said axles (43, 44) as necessary and in an operating-status-dependent manner, a device (46) is provided which, when there is a rotation speed difference between the vehicle axles, builds up by means of a pump system (46A) a hydraulic pressure with which frictional elements of a disk clutch (46B) that can be brought into frictional engagement with one another can be acted upon in such manner that a speed-difference-reducing torque is applied respectively to the two vehicle axles (43, 44).

24. Drive train according to any of claims 21 to 23, characterized in that for the distribution of the fraction of the drive torque delivered to a vehicle axle (43 or 44) in the transverse direction of the vehicle between two drive wheels of the said axle (43 or 44) as necessary and in an operation-status-dependent manner, a controlled differential lock (49) is arranged in the power path of a vehicle axle (43 or 44).

25. Drive train according to any of claims 21 to 23, characterized in that to distribute the fraction of the drive torque delivered to a vehicle axle (43 or 44) in the transverse direction of the vehicle between two drive wheels of the said axle (43 or 44), an open differential (47) is arranged in the power path of a vehicle axle (43 or 44).